

"If war were declared to-morrow, what would we do for aircraft?"

AVIATION

APRIL 9, 1923

Issued Weekly

PRICE 10 CENTS



Target Glider developed by McCook Field for aerial gunnery practice

Opinion Editor, U. S. Army Air Service

VOLUME
XIV

SPECIAL FEATURES

Number
15

GERMAN AIR ACTIVITIES AND LATIN AMERICA
THE LACIERVA "AUTOGIRO" FLYING MACHINE
THE OEHMICHEN-PEUGEOT HELICOPTER DESCRIBED
AMERICAN PILOTS MAKE NEW WORLD'S SPEED RECORDS

THE GARDNER, MOFFAT CO., INC.
HIGHLAND, N. Y.
225 FOURTH AVENUE, NEW YORK



THE NEW



PURSUIT SHIP

With 400 H. P. Curtiss D-12 Motor

FASTEST, MOST COMPACT AND ACCESSIBLE

FIGHTING UNIT

YET PRODUCED

Designed and Built to meet Service Requirements.

Metal fuselage, Curtiss Wing-Type Radiator, Quick Detachable Cowling
and other essential improvements explain its remarkable performance.

THE CURTISS AEROPLANE & MOTOR CORPORATION

GARDEN CITY, LONG ISLAND, NEW YORK



APRIL 9, 1923

AVIATION

VOL. XIV, NO. 15

Member of the Audit Bureau of Circulations

CONTENTS

Editorials	392	Chicago Municipal Airport	409
Germany After Jodelyn and Latin America	393	Warfare Values	409
Continental Airport	395	Aircraft for Relief Operations	411
American Pilot Make New World's Round Trip	396	Blindfold Fanny Cooping	411
The Lusitania, "Autogiro"	397	Aero Club of Wisconsin	411
Two Letters	398	New Air Commission	412
Canadian Air Activities	399	Aviation in Congress	412
German-Polish Dispute	399	New Map for Air Navigation	412
International Air Congress, London	399	Visit Aerial Camera	413
The Bremen Philosopher	400	British Torpedo Flying Boat	413
New French School Reform	400	Army and Navy Air News	415

THE GARDNER, MOFFAT COMPANY, Inc., Publishers

HIGHLAND, N. Y.

225 FOURTH AVENUE, NEW YORK

Subscription price: Four dollars per year. Single copies
ten cents. Orders, for delivery. Foreign, no delivery
a year. Copyright 1923, by the Gardner, Moffat Com-
pany, Inc.

Issued every Monday. Prices close ten days previously
Entered as second-class matter Nov. 22, 1910, at the
Post Office at Highland, N. Y., under act of March
3, 1879.

THOMAS-MORSE AIRCRAFT CORPORATION

CONTRACTORS TO U. S. GOVERNMENT

ITHACA.



NEW YORK

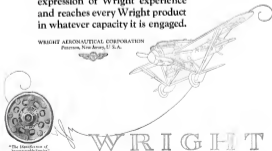
MEASURING UP TO A FAMOUS NAME

It is only when engineering, production and service are firmly grounded upon experience that the magnitude of Wright Achievement may be realized in its proper perspective.

To the Wright nineteen-year-old experience in correct aeronautical engineering practice is added the production facilities and organization that bespeak the Quality of the Wright product.

Service, therefore, is the tangible expression of Wright experience and reaches every Wright product in whatever capacity it is engaged.

WRIGHT AERONAUTICAL CORPORATION
Paterson, New Jersey, U. S. A.



"The Standard of
Incomparable Service"

L. D. GARDNER
PRESIDENT
W. D. MOTTET
VICE-PRESIDENT
W. J. BEANES
TREASURER
GEORGE MONROE
FOREIGN MANAGER

Vol. XIV

APRIL 9, 1927

No. 25

AVIATION

LAMAR D'OLY
EDITOR
VIRGINIA E. CLARK
LAWRENCE P. WATSON
DOLPH H. HUFF
CORRESPONDING EDITORS

The Listeria "Antelope"

THE Listeria "Antelope" which is described in this week's often national interest from the refinery, and more so even from the naval, point of view. While at first sight there is the temptation to call the machine an engineering freak, this may well be a hasty judgment. Our first thought on the machine has been heretofore, apparently well under control, looking automatically on terms, and it has looked with particular interest on forward velocity. That its speed was moderate for the horsepower employed and the load carried is hardly astounding in view of the fact that this was an experimental machine.

It is to be presumed that the trials of the Antelope took place under the most favorable weather conditions, hence the machine has still to demonstrate how it behaves in gusty air, which may affect its automatic lateral stability. Conclusive evidence as to the inherent question of the Antelope will only be had after very extensive operation under all kinds of conditions, and the trials will be looked forward to with considerable interest.

In the meantime some operations with regard to the practical value of such "gyroplanes" seem likely. That the gyroplane may replace the airplane for civil and military purposes, is not likely unless the gyroplane can equal the performance of an equivalent airplane and still possess the feature of landing without forward velocity—which seems doubtful. This is really the whole crux of the problem of advance. Variable camber wings, Flapless, Hauling Flap, variable wings and variable wing cam, devices all endeavor to make the airplane land at the lowest possible speed without sacrificing its high speed in flight, for the latter is the main advantage the flying machine possesses over other vehicles. All these devices have achieved a certain measure of success, but the drawbacks they also embody have so far prevented their general use.

What the gyroplane has, accordingly, however, if further experiments demonstrate its practical value, is in demand in a considerable extent the present enthusiasm for the helicopter. The reason of this of the helicopter is not so much its ability to "lift off" vertically from the ground as its—yet somewhat—ability to land vertically, that is, without forward velocity. Airplane accidents happen mostly on landing at high speed on uneven ground, whereas take off accidents are extremely rare. Hence, if there existed a flying machine that would take off like an airplane and land like a helicopter, the need for the latter type of machine would disappear, although airplane accidents might and possibly would still be needed for many purposes.

From the military viewpoint gyroplanes would be extremely

valuable for landing in restricted places, such as over the desert lines where no flying fields can be laid out, or on board ship. A flying machine that could be shot into the air from a ship and that would land with no forward velocity on the deck of a aircraft carrier would solve one of the most difficult problems of naval aviation. This possibility should not be overlooked by our naval authorities, for even though gyroplanes may not be adapted for fighting on account of their inherent instability, they may prove very useful for observation.

New York to Newport Air Line

THE announcement that a flying boat service for passengers will operate on a schedule, next summer, between New York and Newport will be welcomed by all those who are interested in the development of air transport by means of up-to-date aircraft.

Aerovox has steadfastly maintained that air transport can not be made a business proposition without aircraft specially designed for the purpose, and that the use of converted war aircraft would not last for a temporary expedient. We also believe that, far from supplementing any other means of transport, aircraft will create a shortcut of its own, one which time is so valuable that they will be ready to pay the necessary high price charged for high speed transport if it is safe and reasonably comfortable.

The past performance of the Keating air yacht, which type is to be used on the New York to Newport service, are a brief that these conditions will be fulfilled, and auger well for the success of the new air line.

American Aviation to the Fore

IT is a gratifying indication of the growth of American aviation that no longer was the new speed records ever recognized elsewhere made by French planes known in this country than the Army Air Service would not and believed them as a brilliant display at McCook Field. While the maximum speed, duration and distance records have not yet been brought back to America, we may not assume that the Air Service will do its utmost to bring about the result.

The Air Service thus establishes the doctrine that every aviation record which does not belong to America should be accepted for what it is a trophy back to the country which gave the world the flying machine. We should like to see the Air Service also go after the stinky records, all of which are ten years old and could handily be beaten.

"If we were declared to-surrender what would we do for aircraft?"

greater also. Therefore, the total resultant of this moment will not pass through its center and the whole system will tend to bank. This banking effect has been overcome in the Autogiro by fixing the blades to the shaft by means of a hinge, which permits them to set themselves automatically in the resultant position of the centrifugal force and lift. In such a way, blades A will bank slightly, while blades B will remain horizontal and the total resultant of the lifting moment will always pass through its center.

If we analyze the effect of the lifted blades of the rotor, we see that the shaft can freely change its angle with the plane of rotation of the blades, but that the blades have a strong tendency to return to their original position relative to the shaft. This gives an automatically perfect loading in the turns and stability in flight.

The velocity of the blades relative to the air is much greater than the translational speed of the whole machine. The angle of attack is a function of the translational speed of the whole machine and the angle between the direction of motion and the plane of rotation of the blades. This shows a much greater range of speeds and angles of flight as the whole machine and will permit loadings in very small space without horizontal motion.

The Autogiro weighs about 550 lb., empty and 1100 lb. loaded. The horizontal speed attained is from 30 to 55 m.p.h. The rotational speed of the lifting rotor is about 140 r.p.m. In horizontal flight, the descending speed in vertical landing is of about 4.50 ft. per second.

The Engineer and the Pilot

Mr. Laurence, Jr., in 27 years old, and comes from one of the oldest and best families of Madrid. He is the son of one of the most popular Spanish political figures who has been several times Minister of the Interior, Minister of War and Minister of Finance, being at present the chief of a Spanish political group. He is a cultivated man and has been successfully several campaigns since 1912. He started to work as his first Autogiro in 1920. The present machine is his fourth Autogiro.

The tests have been carried out by Juan Alejandro G. Suarez, Spanish Air Service, Lieutenant Spanish army and chief of the Spanish Air Force, who came to Spain with him. He is one of the most popular pilots of the Spanish Air Service, and has been a teacher in the Getafe Army Flying School for several years.

Two Letters

Editor, AVIATION—

It is very gratifying to receive your letter of March 7, with reference to my review article in the Saturday Evening Post, entitled, "Are We Lost?" Your criticism are constructive and very helpful.

The one thing is which, of course, as a lawyer, I am generally interested in the subject of federal legislative government. The industry now seems to get ahead, but our country is in a serious lack of understanding on the part of the members of Congress with regard to the necessity of legislation on the subject of federal control of aviation.

It was not my intention in the Saturday Evening Post article to give the impression that there is a lack of interest in aviation in general. There is a very large interest in the subject throughout this country, but there is a lack of interest on the part of Congress in laying the ground-work for the protection of private capital in its investment.

The question of subsidies to which you refer, will be dis-

cussed in detail in a series of articles on European aviation which I have written for the *Harvard* newspaper. These articles will begin appearing in April in the Sunday edition of the *Harvard* papers throughout the country, and will later be published in book form.

I note that you say in regard to the supercharger, and the fact that I credited its development to the McCook Field. I did not intend to overlook the invention, or the fact that this is a development of the McCook Field Co.

In one of the above articles on European aviation, and the application of European discoveries to American problems, I have called attention to the splendid work which the Dayton-Wright Co. has done in the testing of various planes, and the remarkably short time in which they have achieved satisfactory results. I agree with you that it is very easy to learn to fly, and the actual ability to fly can be developed in a very few hours.

I wish you will realize that my own purpose in the *Saturday Evening Post* article was to emphasize the necessity of federal legislation for aeronautics. In so much as any legal subject is often hairy, I tried to make the desired impression on the reading public through the medium of a story of the development of aviation leading to serious danger resulting from an argument for this legislation in the usual legal form.

W. JEROME DAVIS

San Diego Calif., March 17, 1935

Editor, AVIATION—

I wish to call your attention to the first article in *The Aviation*, London "Why, March 1, 1935, entitled "The Peace Time Aviation." I will venture to say that this article has done more to tear down aeronautics in the eyes of the modern, than the Rome or RMS accident. Every student who reads this magazine will be shocked and will be able to say that not one of them would care to ride in or trust his possessions to an airplane.

It is this public opinion that is the very life blood of the flying industry, and that of which it is in a very real need today.

I think this article was much provoked. During the war the permittees are built up the same way and the industry was not so true of the conditions in their early life. I think that the majority of the deaths, which the author has severely laid to rest, was not avoidable, and should not be used as a palliative for aviation.

It is no wonder that the national aviation bill is not passed. It will probably take a great deal of work to convince the modern of the compensated work of aviation. If many constructive articles were printed in our newspapers and magazines, aviation would not be faster progress. Also if more of our aeronautical engineers, instead of only and very few, would really get out and meet—the general public would receive the correct view regarding aviation.

BENJAMIN GRACE

Massachusetts, March 20th, 4, 1935

Canadian Air Activities

A large all-Canada passenger conference with five continents arrived at Toronto, Ont., from Detroit March 21. The message was said to be the representative of a regular passenger and freight service between Chicago, Detroit, Toronto and Montreal.

Each airplane to be landed on the route will carry twelve passengers and 1000 lb. of freight. Toronto will be the base of operations with a scheduled five-hour flight to Chicago.

An air mail service between Ottawa, Montreal and New York is also under consideration. Routes of this province are said to be under review, favorably a proposition for such service advanced on a recent visit to the state by Harry D. Whistler, Montreal pilot, who is connected with the Transcontinental Air Service, Ltd.

The Oehmichen-Peugeot Helicopter

A Machine which Embodies some Unusual Features

The second helicopter designed and built by Ettore Oehmichen, with which flights up to 5½ mi. duration and 250 ft. distance have been accomplished, is a great improvement over his first one. The main reason for this is that the machine is built upon the Engineering Division of the French Air Service, which comprise installation of five rotors in the tail, and a complete system in flight in low altitude. When these tests have been made, another machine will be built for which plans have already been drawn up, and with which E. Oehmichen hopes to make still more flights, with the same result.

The machine consists of a framework of duralumin tubing, forming a cross with angular arms. The greater arm, or longitudinal one, is the tail of the machine, and indicates its principal direction of motion.

At the four ends of the cross are placed the lifting screws. These screws are grouped in pairs, with diameters of 700 in. for the lateral pair and 600 in. for the longitudinal pair. All four screws turn at the same speed. The screws are mounted in ball bearings on a central shaft which is secured with a strength to meet the condition when the entire load is concentrated on one of the two blades. The transmission consists of four hollow shafts, placed two by two on different levels, and coming from a central motor.

The four screws are driven by a 9 cylinder 250 hp. Edison engine, which is mounted in the central cone. The engine has been slightly altered to allow it to run with its own vertical lift. It is supplied by two gas tanks, of the same capacity as the Wern. When the helicopter flies these reservoirs are automatically isolated from the engine.

Gyroscopic Stabilizer

The central portion of the framework contains the stabilizing apparatus, which consists of a gyroscope fixed to the shaft of the motor and turning at a maximum peripheral speed of 150 revs. per second. This apparatus assures stability in tilt and, and returns conditions in disturbed air.

The machine is controlled in flight by four variable pitch screws of wood, which are mounted on the propeller hubs at right angles to the lifting screws. The pitch is varied by means of a control lever, actuated or depressed the angle of attack of these blades, and so add or subtract from the thrust of the same screws. This arrangement allows the in-

tevaluation of fighting angles of varying intensity, either to leave the machine in its normal position, when a persistent mass of stability overcomes the resistance of the gyroscopic, or to incline the machine positively to give it motion in a given direction.

As the gyroscopic and the engine introduce a reaction couple which it is necessary to overcome, there is provided an air screw with horizontal axis, and having a large leverage. This screw is driven by a transmission from the shaft of the forward lifting screw.

The variable pitch auxiliary screwman permits to incline the machine at will, and to control the direction of the lift. The one also is obtained by the action of a tractor propeller placed at the front of the machine.

Revised Propeller and Control

Up to now a fixed pitch turbine has been used, but M. Oehmichen proposes to replace it by a variable pitch propeller. A fixed pitch will be used to vary the pitch of the turbine the propeller, during a climb or negative climb, or landing.

M. Oehmichen has found the means not only of driving his helicopter during transitional movement, but also to modify its orientation when stationary. For the transitional movement, he uses two screws, placed behind the tractor propeller and worked by a pump.

For modifying the orientation when the apparatus is stationary, two horizontal surfaces are used, placed near the front lifting screw. These surfaces are controlled in the same way as the other two deviating surfaces.

Final control will be replaced by a handle fixed to the joystick. The pilot will then be able to control the machine without taking his hand off the control lever.

The leading gear consists of four footwheels which are placed in pairs of diameters at the four tips of the framework and of three steering wheels. These footwheels and wheels are connected by means of two footwheels placed in front and disposed on a fixed axle.

The pilot is seated in a simple basket seat at the back of the machine, with the power plant in front of him. The machine weighs 1000 lb. in flight, and the pilot carries the full load of air from the lifting screws.

The helicopter weighs fully loaded, with the pilot on board, 1570 lb.

Aspects, (b) Engineering Problems, (c) Commercial and Financial Problems, and (d) Social and Legal Aspects.

Group D will devote itself to (a) Airplane Design and Construction and (b) Military utilization of civil aviation.

The meeting of these papers will occupy Monday, Wednesday and Friday of the week, while Thursday and Friday will be devoted to visits to various points of interest. The Air Society here arranged that the Royal Air Force Museum will take place on the Saturday, June 29.

The qualifications for membership in membership of a country which is represented on the Fédération Aéronautique Internationale as a signatory to the International Air Convention, Vienna, 1926, are: (a) A citizen of the country to which he applies; (b) A person of sound mind and body; (c) A person of sound mind and body; (d) A person of sound mind and body; (e) A person of sound mind and body; (f) A person of sound mind and body; (g) A person of sound mind and body; (h) A person of sound mind and body; (i) A person of sound mind and body; (j) A person of sound mind and body; (k) A person of sound mind and body; (l) A person of sound mind and body; (m) A person of sound mind and body; (n) A person of sound mind and body; (o) A person of sound mind and body; (p) A person of sound mind and body; (q) A person of sound mind and body; (r) A person of sound mind and body; (s) A person of sound mind and body; (t) A person of sound mind and body; (u) A person of sound mind and body; (v) A person of sound mind and body; (w) A person of sound mind and body; (x) A person of sound mind and body; (y) A person of sound mind and body; (z) A person of sound mind and body; (aa) A person of sound mind and body; (ab) A person of sound mind and body; (ac) A person of sound mind and body; (ad) A person of sound mind and body; (ae) A person of sound mind and body; (af) A person of sound mind and body; (ag) A person of sound mind and body; (ah) A person of sound mind and body; (ai) A person of sound mind and body; (aj) A person of sound mind and body; (ak) A person of sound mind and body; (al) A person of sound mind and body; (am) A person of sound mind and body; (an) A person of sound mind and body; (ao) A person of sound mind and body; (ap) A person of sound mind and body; (aq) A person of sound mind and body; (ar) A person of sound mind and body; (as) A person of sound mind and body; (at) A person of sound mind and body; (au) A person of sound mind and body; (av) A person of sound mind and body; (aw) A person of sound mind and body; (ax) A person of sound mind and body; (ay) A person of sound mind and body; (az) A person of sound mind and body; (ba) A person of sound mind and body; (bb) A person of sound mind and body; (bc) A person of sound mind and body; (bd) A person of sound mind and body; (be) A person of sound mind and body; (bf) A person of sound mind and body; (bg) A person of sound mind and body; (bh) A person of sound mind and body; (bi) A person of sound mind and body; (bj) A person of sound mind and body; (bk) A person of sound mind and body; (bl) A person of sound mind and body; (bm) A person of sound mind and body; (bn) A person of sound mind and body; (bo) A person of sound mind and body; (bp) A person of sound mind and body; (bq) A person of sound mind and body; (br) A person of sound mind and body; (bs) A person of sound mind and body; (bt) A person of sound mind and body; (bu) A person of sound mind and body; (bv) A person of sound mind and body; (bw) A person of sound mind and body; (bx) A person of sound mind and body; (by) A person of sound mind and body; (bz) A person of sound mind and body; (ca) A person of sound mind and body; (cb) A person of sound mind and body; (cc) A person of sound mind and body; (cd) A person of sound mind and body; (ce) A person of sound mind and body; (cf) A person of sound mind and body; (cg) A person of sound mind and body; (ch) A person of sound mind and body; (ci) A person of sound mind and body; (cj) A person of sound mind and body; (ck) A person of sound mind and body; (cl) A person of sound mind and body; (cm) A person of sound mind and body; (cn) A person of sound mind and body; (co) A person of sound mind and body; (cp) A person of sound mind and body; (cq) A person of sound mind and body; (cr) A person of sound mind and body; (cs) A person of sound mind and body; (ct) A person of sound mind and body; (cu) A person of sound mind and body; (cv) A person of sound mind and body; (cw) A person of sound mind and body; (cx) A person of sound mind and body; (cy) A person of sound mind and body; (cz) A person of sound mind and body; (da) A person of sound mind and body; (db) A person of sound mind and body; (dc) A person of sound mind and body; (dd) A person of sound mind and body; (de) A person of sound mind and body; (df) A person of sound mind and body; (dg) A person of sound mind and body; (dh) A person of sound mind and body; (di) A person of sound mind and body; (dj) A person of sound mind and body; (dk) A person of sound mind and body; (dl) A person of sound mind and body; (dm) A person of sound mind and body; (dn) A person of sound mind and body; (do) A person of sound mind and body; (dp) A person of sound mind and body; (dq) A person of sound mind and body; (dr) A person of sound mind and body; (ds) A person of sound mind and body; (dt) A person of sound mind and body; (du) A person of sound mind and body; (dv) A person of sound mind and body; (dw) A person of sound mind and body; (dx) A person of sound mind and body; (dy) A person of sound mind and body; (dz) A person of sound mind and body; (ea) A person of sound mind and body; (eb) A person of sound mind and body; (ec) A person of sound mind and body; (ed) A person of sound mind and body; (ee) A person of sound mind and body; (ef) A person of sound mind and body; (eg) A person of sound mind and body; (eh) A person of sound mind and body; (ei) A person of sound mind and body; (ej) A person of sound mind and body; (ek) A person of sound mind and body; (el) A person of sound mind and body; (em) A person of sound mind and body; (en) A person of sound mind and body; (eo) A person of sound mind and body; (ep) A person of sound mind and body; (eq) A person of sound mind and body; (er) A person of sound mind and body; (es) A person of sound mind and body; (et) A person of sound mind and body; (eu) A person of sound mind and body; (ev) A person of sound mind and body; (ew) A person of sound mind and body; (ex) A person of sound mind and body; (ey) A person of sound mind and body; (ez) A person of sound mind and body; (fa) A person of sound mind and body; (fb) A person of sound mind and body; (fc) A person of sound mind and body; (fd) A person of sound mind and body; (fe) A person of sound mind and body; (ff) A person of sound mind and body; (fg) A person of sound mind and body; (fh) A person of sound mind and body; (fi) A person of sound mind and body; (fj) A person of sound mind and body; (fk) A person of sound mind and body; (fl) A person of sound mind and body; (fm) A person of sound mind and body; (fn) A person of sound mind and body; (fo) A person of sound mind and body; (fp) A person of sound mind and body; (fq) A person of sound mind and body; (fr) A person of sound mind and body; (fs) A person of sound mind and body; (ft) A person of sound mind and body; (fu) A person of sound mind and body; (fv) A person of sound mind and body; (fw) A person of sound mind and body; (fx) A person of sound mind and body; (fy) A person of sound mind and body; (fz) A person of sound mind and body; (ga) A person of sound mind and body; (gb) A person of sound mind and body; (gc) A person of sound mind and body; (gd) A person of sound mind and body; (ge) A person of sound mind and body; (gf) A person of sound mind and body; (gg) A person of sound mind and body; (gh) A person of sound mind and body; (gi) A person of sound mind and body; (gj) A person of sound mind and body; (gk) A person of sound mind and body; (gl) A person of sound mind and body; (gm) A person of sound mind and body; (gn) A person of sound mind and body; (go) A person of sound mind and body; (gp) A person of sound mind and body; (gq) A person of sound mind and body; (gr) A person of sound mind and body; (gs) A person of sound mind and body; (gt) A person of sound mind and body; (gu) A person of sound mind and body; (gv) A person of sound mind and body; (gw) A person of sound mind and body; (gx) A person of sound mind and body; (gy) A person of sound mind and body; (gz) A person of sound mind and body; (ha) A person of sound mind and body; (hb) A person of sound mind and body; (hc) A person of sound mind and body; (hd) A person of sound mind and body; (he) A person of sound mind and body; (hf) A person of sound mind and body; (hg) A person of sound mind and body; (hh) A person of sound mind and body; (hi) A person of sound mind and body; (hj) A person of sound mind and body; (hk) A person of sound mind and body; (hl) A person of sound mind and body; (hm) A person of sound mind and body; (hn) A person of sound mind and body; (ho) A person of sound mind and body; (hp) A person of sound mind and body; (hq) A person of sound mind and body; (hr) A person of sound mind and body; (hs) A person of sound mind and body; (ht) A person of sound mind and body; (hu) A person of sound mind and body; (hv) A person of sound mind and body; (hw) A person of sound mind and body; (hx) A person of sound mind and body; (hy) A person of sound mind and body; (hz) A person of sound mind and body; (ia) A person of sound mind and body; (ib) A person of sound mind and body; (ic) A person of sound mind and body; (id) A person of sound mind and body; (ie) A person of sound mind and body; (if) A person of sound mind and body; (ig) A person of sound mind and body; (ih) A person of sound mind and body; (ii) A person of sound mind and body; (ij) A person of sound mind and body; (ik) A person of sound mind and body; (il) A person of sound mind and body; (im) A person of sound mind and body; (in) A person of sound mind and body; (io) A person of sound mind and body; (ip) A person of sound mind and body; (iq) A person of sound mind and body; (ir) A person of sound mind and body; (is) A person of sound mind and body; (it) A person of sound mind and body; (iu) A person of sound mind and body; (iv) A person of sound mind and body; (iw) A person of sound mind and body; (ix) A person of sound mind and body; (iy) A person of sound mind and body; (iz) A person of sound mind and body; (ja) A person of sound mind and body; (jb) A person of sound mind and body; (jc) A person of sound mind and body; (jd) A person of sound mind and body; (je) A person of sound mind and body; (jf) A person of sound mind and body; (jg) A person of sound mind and body; (jh) A person of sound mind and body; (ji) A person of sound mind and body; (jj) A person of sound mind and body; (jk) A person of sound mind and body; (jl) A person of sound mind and body; (jm) A person of sound mind and body; (jn) A person of sound mind and body; (jo) A person of sound mind and body; (jp) A person of sound mind and body; (jq) A person of sound mind and body; (jr) A person of sound mind and body; (js) A person of sound mind and body; (jt) A person of sound mind and body; (ju) A person of sound mind and body; (jv) A person of sound mind and body; (jw) A person of sound mind and body; (jx) A person of sound mind and body; (jy) A person of sound mind and body; (jz) A person of sound mind and body; (ka) A person of sound mind and body; (kb) A person of sound mind and body; (kc) A person of sound mind and body; (kd) A person of sound mind and body; (ke) A person of sound mind and body; (kf) A person of sound mind and body; (kg) A person of sound mind and body; (kh) A person of sound mind and body; (ki) A person of sound mind and body; (kj) A person of sound mind and body; (kk) A person of sound mind and body; (kl) A person of sound mind and body; (km) A person of sound mind and body; (kn) A person of sound mind and body; (ko) A person of sound mind and body; (kp) A person of sound mind and body; (kq) A person of sound mind and body; (kr) A person of sound mind and body; (ks) A person of sound mind and body; (kt) A person of sound mind and body; (ku) A person of sound mind and body; (kv) A person of sound mind and body; (kw) A person of sound mind and body; (kx) A person of sound mind and body; (ky) A person of sound mind and body; (kz) A person of sound mind and body; (la) A person of sound mind and body; (lb) A person of sound mind and body; (lc) A person of sound mind and body; (ld) A person of sound mind and body; (le) A person of sound mind and body; (lf) A person of sound mind and body; (lg) A person of sound mind and body; (lh) A person of sound mind and body; (li) A person of sound mind and body; (lj) A person of sound mind and body; (lk) A person of sound mind and body; (ll) A person of sound mind and body; (lm) A person of sound mind and body; (ln) A person of sound mind and body; (lo) A person of sound mind and body; (lp) A person of sound mind and body; (lq) A person of sound mind and body; (lr) A person of sound mind and body; (ls) A person of sound mind and body; (lt) A person of sound mind and body; (lu) A person of sound mind and body; (lv) A person of sound mind and body; (lw) A person of sound mind and body; (lx) A person of sound mind and body; (ly) A person of sound mind and body; (lz) A person of sound mind and body; (ma) A person of sound mind and body; (mb) A person of sound mind and body; (mc) A person of sound mind and body; (md) A person of sound mind and body; (me) A person of sound mind and body; (mf) A person of sound mind and body; (mg) A person of sound mind and body; (mh) A person of sound mind and body; (mi) A person of sound mind and body; (mj) A person of sound mind and body; (mk) A person of sound mind and body; (ml) A person of sound mind and body; (mm) A person of sound mind and body; (mn) A person of sound mind and body; (mo) A person of sound mind and body; (mp) A person of sound mind and body; (mq) A person of sound mind and body; (mr) A person of sound mind and body; (ms) A person of sound mind and body; (mt) A person of sound mind and body; (mu) A person of sound mind and body; (mv) A person of sound mind and body; (mw) A person of sound mind and body; (mx) A person of sound mind and body; (my) A person of sound mind and body; (mz) A person of sound mind and body; (na) A person of sound mind and body; (nb) A person of sound mind and body; (nc) A person of sound mind and body; (nd) A person of sound mind and body; (ne) A person of sound mind and body; (nf) A person of sound mind and body; (ng) A person of sound mind and body; (nh) A person of sound mind and body; (ni) A person of sound mind and body; (nj) A person of sound mind and body; (nk) A person of sound mind and body; (nl) A person of sound mind and body; (nm) A person of sound mind and body; (nn) A person of sound mind and body; (no) A person of sound mind and body; (np) A person of sound mind and body; (nq) A person of sound mind and body; (nr) A person of sound mind and body; (ns) A person of sound mind and body; (nt) A person of sound mind and body; (nu) A person of sound mind and body; (nv) A person of sound mind and body; (nw) A person of sound mind and body; (nx) A person of sound mind and body; (ny) A person of sound mind and body; (nz) A person of sound mind and body; (oa) A person of sound mind and body; (ob) A person of sound mind and body; (oc) A person of sound mind and body; (od) A person of sound mind and body; (oe) A person of sound mind and body; (of) A person of sound mind and body; (og) A person of sound mind and body; (oh) A person of sound mind and body; (oi) A person of sound mind and body; (oj) A person of sound mind and body; (ok) A person of sound mind and body; (ol) A person of sound mind and body; (om) A person of sound mind and body; (on) A person of sound mind and body; (oo) A person of sound mind and body; (op) A person of sound mind and body; (oq) A person of sound mind and body; (or) A person of sound mind and body; (os) A person of sound mind and body; (ot) A person of sound mind and body; (ou) A person of sound mind and body; (ov) A person of sound mind and body; (ow) A person of sound mind and body; (ox) A person of sound mind and body; (oy) A person of sound mind and body; (oz) A person of sound mind and body; (pa) A person of sound mind and body; (pb) A person of sound mind and body; (pc) A person of sound mind and body; (pd) A person of sound mind and body; (pe) A person of sound mind and body; (pf) A person of sound mind and body; (pg) A person of sound mind and body; (ph) A person of sound mind and body; (pi) A person of sound mind and body; (pj) A person of sound mind and body; (pk) A person of sound mind and body; (pl) A person of sound mind and body; (pm) A person of sound mind and body; (pn) A person of sound mind and body; (po) A person of sound mind and body; (pp) A person of sound mind and body; (pq) A person of sound mind and body; (pr) A person of sound mind and body; (ps) A person of sound mind and body; (pt) A person of sound mind and body; (pu) A person of sound mind and body; (pv) A person of sound mind and body; (pw) A person of sound mind and body; (px) A person of sound mind and body; (py) A person of sound mind and body; (pz) A person of sound mind and body; (qa) A person of sound mind and body; (qb) A person of sound mind and body; (qc) A person of sound mind and body; (qd) A person of sound mind and body; (qe) A person of sound mind and body; (qf) A person of sound mind and body; (qg) A person of sound mind and body; (qh) A person of sound mind and body; (qi) A person of sound mind and body; (qj) A person of sound mind and body; (qk) A person of sound mind and body; (ql) A person of sound mind and body; (qm) A person of sound mind and body; (qn) A person of sound mind and body; (qo) A person of sound mind and body; (qp) A person of sound mind and body; (qq) A person of sound mind and body; (qr) A person of sound mind and body; (qs) A person of sound mind and body; (qt) A person of sound mind and body; (qu) A person of sound mind and body; (qv) A person of sound mind and body; (qw) A person of sound mind and body; (qx) A person of sound mind and body; (qy) A person of sound mind and body; (qz) A person of sound mind and body; (ra) A person of sound mind and body; (rb) A person of sound mind and body; (rc) A person of sound mind and body; (rd) A person of sound mind and body; (re) A person of sound mind and body; (rf) A person of sound mind and body; (rg) A person of sound mind and body; (rh) A person of sound mind and body; (ri) A person of sound mind and body; (rj) A person of sound mind and body; (rk) A person of sound mind and body; (rl) A person of sound mind and body; (rm) A person of sound mind and body; (rn) A person of sound mind and body; (ro) A person of sound mind and body; (rp) A person of sound mind and body; (rq) A person of sound mind and body; (rr) A person of sound mind and body; (rs) A person of sound mind and body; (rt) A person of sound mind and body; (ru) A person of sound mind and body; (rv) A person of sound mind and body; (rw) A person of sound mind and body; (rx) A person of sound mind and body; (ry) A person of sound mind and body; (rz) A person of sound mind and body; (sa) A person of sound mind and body; (sb) A person of sound mind and body; (sc) A person of sound mind and body; (sd) A person of sound mind and body; (se) A person of sound mind and body; (sf) A person of sound mind and body; (sg) A person of sound mind and body; (sh) A person of sound mind and body; (si) A person of sound mind and body; (sj) A person of sound mind and body; (sk) A person of sound mind and body; (sl) A person of sound mind and body; (sm) A person of sound mind and body; (sn) A person of sound mind and body; (so) A person of sound mind and body; (sp) A person of sound mind and body; (sq) A person of sound mind and body; (sr) A person of sound mind and body; (ss) A person of sound mind and body; (st) A person of sound mind and body; (su) A person of sound mind and body; (sv) A person of sound mind and body; (sw) A person of sound mind and body; (sx) A person of sound mind and body; (sy) A person of sound mind and body; (sz) A person of sound mind and body; (ta) A person of sound mind and body; (tb) A person of sound mind and body; (tc) A person of sound mind and body; (td) A person of sound mind and body; (te) A person of sound mind and body; (tf) A person of sound mind and body; (tg) A person of sound mind and body; (th) A person of sound mind and body; (ti) A person of sound mind and body; (tj) A person of sound mind and body; (tk) A person of sound mind and body; (tl) A person of sound mind and body; (tm) A person of sound mind and body; (tn) A person of sound mind and body; (to) A person of sound mind and body; (tp) A person of sound mind and body; (tq) A person of sound mind and body; (tr) A person of sound mind and body; (ts) A person of sound mind and body; (tt) A person of sound mind and body; (tu) A person of sound mind and body; (tv) A person of sound mind and body; (tw) A person of sound mind and body; (tx) A person of sound mind and body; (ty) A person of sound mind and body; (tz) A person of sound mind and body; (ua) A person of sound mind and body; (ub) A person of sound mind and body; (uc) A person of sound mind and body; (ud) A person of sound mind and body; (ue) A person of sound mind and body; (uf) A person of sound mind and body; (ug) A person of sound mind and body; (uh) A person of sound mind and body; (ui) A person of sound mind and body; (uj) A person of sound mind and body; (uk) A person of sound mind and body; (ul) A person of sound mind and body; (um) A person of sound mind and body; (un) A person of sound mind and body; (uo) A person of sound mind and body; (up) A person of sound mind and body; (uq) A person of sound mind and body; (ur) A person of sound mind and body; (us) A person of sound mind and body; (ut) A person of sound mind and body; (uu) A person of sound mind and body; (uv) A person of sound mind and body; (uw) A person of sound mind and body; (ux) A person of sound mind and body; (uy) A person of sound mind and body; (uz) A person of sound mind and body; (va) A person of sound mind and body; (vb) A person of sound mind and body; (vc) A person of sound mind and body; (vd) A person of sound mind and body; (ve) A person of sound mind and body; (vf) A person of sound mind and body; (vg) A person of sound mind and body; (vh) A person of sound mind and body; (vi) A person of sound mind and body; (vj) A person of sound mind and body; (vk) A person of sound mind and body; (vl) A person of sound mind and body; (vm) A person of sound mind and body; (vn) A person of sound mind and body; (vo) A person of sound mind and body; (vp) A person of sound mind and body; (vq) A person of sound mind and body; (vr) A person of sound mind and body; (vs) A person of sound mind and body; (vt) A person of sound mind and body; (vu) A person of sound mind and body; (vv) A person of sound mind and body; (vw) A person of sound mind and body; (vx) A person of sound mind and body; (vy) A person of sound mind and body; (vz) A person of sound mind and body; (wa) A person of sound mind and body; (wb) A person of sound mind and body; (wc) A person of sound mind and body; (wd) A person of sound mind and body; (we) A person of sound mind and body; (wf) A person of sound mind and body; (wg) A person of sound mind and body; (wh) A person of sound mind and body; (wi) A person of sound mind and body; (wj) A person of sound mind and body; (wk) A person of sound mind and body; (wl) A person of sound mind and body; (wm) A person of sound mind and body; (wn) A person of sound mind and body; (wo) A person of sound mind and body; (wp) A person of sound mind and body; (wq) A person of sound mind and body; (wr) A person of sound mind and body; (ws) A person of sound mind and body; (wt) A person of sound mind and body; (wu) A person of sound mind and body; (wv) A person of sound mind and body; (ww) A person of sound mind and body; (wx) A person of sound mind and body; (wy) A person of sound mind and body; (wz) A person of sound mind and body; (xa) A person of sound mind and body; (xb) A person of sound mind and body; (xc) A person of sound mind and body; (xd) A person of sound mind and body; (xe) A person of sound mind and body; (xf) A person of sound mind and body; (xg) A person of sound mind and body; (xh) A person of sound mind and body; (xi) A person of sound mind and body; (xj) A person of sound mind and body; (xk) A person of sound mind and body; (xl) A person of sound mind and body; (xm) A person of sound mind and body; (xn) A person of sound mind and body; (xo) A person of sound mind and body; (xp) A person of sound mind and body; (xq) A person of sound mind and body; (xr) A person of sound mind and body; (xs) A person of sound mind and body; (xt) A person of sound mind and body; (xu) A person of sound mind and body; (xv) A person of sound mind and body; (xw) A person of sound mind and body; (xx) A person of sound mind and body; (xy) A person of sound mind and body; (xz) A person of sound mind and body; (ya) A person of sound mind and body; (yb) A person of sound mind and body; (yc) A person of sound mind and body; (yd) A person of sound mind and body; (ye) A person of sound mind and body; (yf) A person of sound mind and body; (yg) A person of sound mind and body; (yh) A person of sound mind and body; (yi) A person of sound mind and body; (yj) A person of sound mind and body; (yk) A person of sound mind and body; (yl) A person of sound mind and body; (ym) A person of sound mind and body; (yn) A person of sound mind and body; (yo) A person of sound mind and body; (yp) A person of sound mind and body; (yq) A person of sound mind and body; (yr) A person of sound mind and body; (ys) A person of sound mind and body; (yt) A person of sound mind and body; (yu) A person of sound mind and body; (yv) A person of sound mind and body; (yw) A person of sound mind and body; (yx) A person of sound mind and body; (yz) A person of sound mind and body; (za) A person of sound mind and body; (zb) A person of sound mind and body; (zc) A person of sound mind and body; (zd) A person of sound mind and body; (ze) A person of sound mind and body; (zf) A person of sound mind and body; (zg) A person of sound mind and body; (zh) A person of sound mind and body; (zi) A person of sound mind and body; (zj) A person of sound mind and body; (zk) A person of sound mind and body; (zl) A person of sound mind and body; (zm) A person of sound mind and body; (zn) A person of sound mind and body; (zo) A person of sound mind and body; (zp) A person of sound mind and body; (zq) A person of sound mind and body; (zr) A person of sound mind and body; (zs) A person of sound mind and body; (zt) A person of sound mind and body; (zu) A person of sound mind and body; (zv) A person of sound mind and body; (zw) A person of sound mind and body; (zx) A person of sound mind and body; (zy) A person of sound mind and body; (zz) A person of sound mind and body; (aa) A person of sound mind and body; (ab) A person of sound mind and body; (ac)

Aviation in Congress

Feb. 11, 1935 — Feb. 24, 1935

- Jan. 24. *House.*
Mr. Kuhn: A bill (H.R. 14134) to amend the general licensing regulations to aircraft pilots or observers in Section 101 of the National Defense Act, as amended.
- Feb. 13. *Senate.*
Mr. Odlin, from the Committee on Post Offices and Post Roads, to which was referred the bill (S. 5984) to authorize and provide for the payment of the amounts expended in the construction of hangars and the maintenance of flying fields for the use of the air mail service of the Post Office Department, reported it without amendment and introduced a report (S. 1543) thereon. Passed the Senate on Feb. 15.
- House.*
Mr. Fitzgerald: A bill (H.R. 14038) to authorize the sale of certain Government property and authorize an appropriation for permanent buildings and improvements for use of the engineering division of the Air Service of the Army, to the Committee on Military Affairs.
- Feb. 15. *House.*
Navy Overseas Bill (S. 4127). Mr. Harkin in a speech calling for the modernization of 43 of our old ships buildings given the number of aircraft currently owned by U. S., Great Britain and Japan. They are:
In line 1: U. S. 8 — Great Britain 8 — Japan 6
Sail line: U. S. 1 — Great Britain 5 — Japan 3
- Feb. 16. *Senate.*
Feb. 15 (S. 5964). See above under Feb. 15. Passed the Senate.
- House.*
Navy Overseas Bill (S. 4127). See 3. Amended authorizing the Secretary of the Navy to expend \$1,500 for acquiring the site of the naval air station at Galveston, Tex., \$25,000 for Lubbock, Tex., \$25,000 for Quantico, Va., \$50,000 for site at Chatham, Mass. Also authorize the sale of the site at Galveston, Tex. Agreed to.
- Feb. 17. *House.*
Senate Bill (S. 3841) (See above) read and sent to the Committee on Commerce.
- Mr. Keenan: Committee on Military Affairs H.R. 14138. A bill to authorize the sale of certain Government property and authorize an appropriation for permanent buildings and improvements for use

of the engineering division of the Air Service of the Army, with amendments (Sept. No. 3849). Referred to the Committee of the Whole House on the State of the Union.

Feb. 22. *House.*
Postage 1936. By Mr. Mead. Petition of Committee of Citizens of Buffalo, N. Y., supporting the Windows left covered by mail stamps and of 1935 (H.R. 9717). To the Committee on Interstate and Foreign Commerce.

Feb. 23. *House.*
President signed the bill H.R. 6204. An act to grant the military target range of Lincoln County, Ohio, to the city of Cleveland, Ohio, and reserving the right to use for military and aviation purposes.

Approved: Charles D. Cramer.

New Map for Air Navigation

A new type of aerial map, which will prove of great assistance to aviators in making cross country flights, has just been developed under direction of the Chief of Air Service, the details being worked out under the direct supervision of the Airway Division of his office. The new characteristics of this map are as follows:

Mountains are shown in blue, railroads in black, differentiating being made between single track and double track lines, towns and cities in black, highways are shown in red, differentiating between the important and the unimportant, towns are blocked in according to shape, a normal layer system of shading is used to represent the various degrees of altitude, that is, light green being used for country between sea and 500 ft. of elevation, light pink between 500 and 1000 ft., yellow between 1000 and 1500 ft., etc. Overprinted upon the map in purple are small letters designating the location of landing facilities on which no details are available. Small dots in purple represent landing facilities on which sketches of such facilities are found along the border of the map. Where the nature of towns are represented, it means that there is no more large building adjacent to the railroad, a large number giving the name of the town. The work of making these towns was done from an experimental standpoint by the Engineering Division of the Air Service at McCook Field, Dayton, Ohio.

This map is in the experimental stage, and a few minor changes are contemplated for additional maps of this nature, that is, highways may be placed in white, and the towns shaded in a red, also the compass roses and landing field data put on in red. The new type of secret navigation map which is already completed is that covering the country between Dayton, Ohio, and Washington, D. C.

The Nistri Aerial Camera

The Nistri Aerial Camera which is illustrated herewith is constructed with interchangeable plate magazine. This magazine can be changed, while in flight, by an operator taking not longer than five seconds. This is an advantage as with one camera in the plane enough spare magazines can be carried to take any number of photographs. A film magazine is provided which is interchangeable with the plate magazine which will take from 200 to 300 photographs. No special manipulation is required to change from the use of the plate magazine to the film magazine.

The camera can be operated either by hand or automatically by a propeller or wind vane placed on the outside of the

British Torpedo Flying Boat

The Supermarine Aviation Works, Ltd., of Southampton, England, recently completed the construction of a new type of torpedo flying boat for the Royal Air Force, carrying with it, possibly gives the following particulars.

The boat has a hull of plywood and has two wings. Twenty-six water tight compartments are provided to insure flotation in case of disaster in the hull. The hull pump is actuated by an auxiliary engine of 60 hp. which is mounted on the hull and which actuates a water propeller for outside circulation. The engine also operates the system for inflating the hull and inflating the engine, and it actuates a main pump for raising the 125 lb. anchor.

The wings are of lightness form and they constitute a sail which can be retracted from the hull by retraction a certain number of bolts. The engine mountings are incorporated in the wing ends. The wings have wooden frames, and the upper and middle wings are fabric covered, while the lower wing, which is 50 ft. above the water line, is entirely covered with plywood.

The following specifications are available:

Span, top and middle wings, 16-10 m.
Span, bottom wing, 14-05 m.
Wing height, 8-15 m.
Maximum height, 7-02 m.
Total wing area, 212 sq. m.
Engine, two 600 hp. Rolls-Royce "Condor".
Cruising speed, 195 kts.

The Supermarine torpedo flying boat can carry sufficient fuel for a 1000 mile flight, or it can carry two 3000 lb. automobile torpedoes for a flight of less distance. The prototype aircraft comprises five sections, two torpedoes are mounted in a gun cradle, three torpedoes on a platform situated on the lower side of the wings, and one on the trapezoid tail.

The Royal Air Force has for some time been experimenting with large ocean going flying boats, one of which is believed to have in the passed the experimental stage. Among these boats there may be modified the following "Fury" (See Rolls-Royce "Condor" 375 hp. engine), the Vickers "Vanguard" (See Rolls-Royce "Condor" 375 hp. engine), the Vickers "Vanguard" (See Rolls-Royce "Condor" 375 hp. engine), and the Fawcett "Vanguard" (See Rolls-Royce "Condor" 375 hp. engine), and the Fawcett "Vanguard" (See Rolls-Royce "Condor" 375 hp. engine).

War-Time Fraud Cases

By direction of the President a Special Board of the War Transactions Section of the Department of Justice, to be known as the Board of Inquiry, was organized Feb. 22 to cooperate with a similar organization created in the War Department in making a survey of the transactions involved in or growing out of the war.

The following officers of the Department will constitute the Board of Inquiry:

The members of the Advisory Council, Judges Keen and Egan.

The Chief of the Sub-Division of the War Transactions Section in Charge of Aviation, Major Stinchcomb.

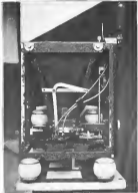
The Chief of the Sub-Division of the War Transactions Section in Charge of Corps and Gunmen, Colonel J. McCulloch.

The Chief of the Sub-Division of the War Transactions Section in Charge of Quartermaster Contracts, C. Frank McCulloch.

The Chief of the Sub-Division of the War Transactions Section in Charge of Ordnance and Foreign Contracts, Henry W. Andrews.

The Board organized by the Secretary of War in composed of the following: The Assistant Secretary of War, Chairman; The Quartermaster General, The Chief of Engineers, The Chief of Ordnance, The Chief of Air Service, The Chief of Finance, Col. A. H. Hodge, Judge Advocate General.

First Lieut. Earl H. DePond, A.S. Kelly Field, has been directed to report to the Judge Advocate.



External view of the Nistri Aerial Camera

feature. Changing from hand to automatic operation is controlled by a lever, and this operation can be carried out with great rapidity should the wind vane fail to function during ordinary operations.

The shutter can be triggered independent from the plate magazine operation. This is useful for taking photographs during a particular pose.

The control levers are placed on an instrument board in the cameraman's cockpit in such a position that their manipulation will be easy and rapid. For taking pictures automatically at high altitudes, where the interval between the pictures would be longer than at low altitudes, a speed reducing gear is provided. This gear is controlled from the outside of the camera case. In a like manner the shutters opening of the lens is controlled from the outside. In order to avoid the cameraman's blindness, a single device is provided to prevent the slide of the magazine being open before the magazine is attached to the camera and also to prevent the magazine being removed until the lens has been closed.

The camera is made of aluminum bronze and weighs without magazine, about 22 lb. It can be fixed with any lens



Design: British Air Ministry

See British Single Seater Fighter, the Bristol "Bulldog", fitted with a Bristol Doppler 500 hp. V-cylinder radial engine.

"If war were declared to-morrow what would we do for strength?"

"If war were declared to-morrow what would we do for strength?"



Trade Mark

What is an Airplane?

The value of an airplane does not alone depend on the amount of wood, metal and cloth it contains. There is something to it besides the material and workmanship — the substance and labor which is apparent when we look at it. Back of all this is the engineering — the force that has taken into account every item of design, quality, strength, purpose, and has moulded the whole into as nearly a perfect machine as the progress of science permits. Continuous experimentation and development in processes, materials and designs

alone makes progress possible.

The Glenn L. Martin Company has not been content to "follow the leader" during the fourteen years of its continuous manufacture of airplanes, but has always left the beaten track so as to be able to progress in the field of aeronautics. Today, this Company's reputation for the successful development of new types is second to none. Its purpose and aim is to continue to build better airplanes than have ever been built before.

THE GLENN L. MARTIN COMPANY

Cleveland

Builders of Quality Aircraft since 1909